REMARKS/ARGUMENTS

Claim Amendments

By the claim amendments presented herein, claim 59 would be rewritten to add the elements of a) a thermocouple to monitor temperature of the feed nozzle surface; and b) means for modifying the characteristics of the cooling medium in response to the temperatures monitored by that thermocouple. Support for incorporation of these two additional elements into claim 59 can be found in the original specification, e.g., in Paragraph [0059] of the published version (U.S. 2004/0152935) of this application.

Upon entry of the claim amendments presented, claims 59, 95, 102, and 103 would remain pending in the application. No additional claims fees are believed to be due as a result of the claim amendments presented.

Invention Synopsis

The invention claimed in this application is directed to a feed vaporization and introduction (FVI) system for a methanol to olefins (MTO) reactor. Such an FVI system is particularly advantageous in that it reduces, inhibits, or eliminates the formation of metal-catalyzed side reactions that can occur when heated methanol feedstocks for the MTO reactor come into contact with some types of metal surfaces of the apparatus used to convey and introduce the feedstock into the reactor.

The system claimed herein includes an oxygenate inlet that has one or more heating devices for vaporizing feedstock. Also included in the system is an oxygenate feed introduction nozzle connected to the inlet. This nozzle includes a tubular member that has a first end for receiving a methanol feedstock from the heating device, a second end protruding into or flush with an interior surface of the MTO reactor, and an inner nozzle surface forming a conduit for delivering the methanol feedstock from the first end to the second end of the tubular member. At least a portion of the inner nozzle surface is formed from a commercial alloy which is resistant to the formation of metal-catalyzed side reaction byproducts.

A second, larger diameter cylindrical tube is oriented coaxially to the feed introduction nozzle. This larger diameter tube forms an outer cooling pathway around the tubular member of

the feed introduction nozzle. This cooling pathway is closed-off at the first end of the nozzle, so that cooling medium can flow through the cooling pathway toward the reactor unit and can exit the feed introduction nozzle within the reactor unit through a diluent outlet. As amended herein, the claimed FVI system further includes a thermocouple associated with the surface of the feed introduction nozzle to monitor the temperature thereof. Finally, as amended, the system also includes means for modifying the characteristics of the cooling medium flowing through the cooling pathway, in response to the nozzle surface temperature, which is monitored by the thermocouple.

Art Rejections

Claim 59 has been finally rejected under 35 USC §102(b) as allegedly being directly anticipated by Cherish *et al.* (U.S. Patent No. 4,282,010, hereinafter "Cherish"). Claims 95, 102, and 103 have been finally rejected under 35 USC §103(a) as allegedly being rendered obvious by Cherish, in view of Roberge (*Handbook of Corrosion Engineering*). The Examiner maintains the position that Cherish discloses all of the elements of claim 59 and that it would have been obvious to use alloys disclosed by Roberge in the apparatus of Cherish to thereby arrive at the systems of Applicants' claims 95, 102, and 103. Such rejections are both respectfully traversed as they would apply to the claims as they would be amended herein.

Cherish discloses a coaxial feed system for fluidized bed coal gasification processes. The Cherish feed system has an inner tube for injecting particulate combustibles into a transport gas, an intermediate annulus around the inner tube for injecting an oxidizing gas, and an outer annulus around the intermediate annulus for transporting a fluidizing and cooling gas. The combustibles and oxidizing gas in the Cherish set-up are discharged vertically upward directly into a combustion jet in the gasification reactor, and the fluidizing/cooling gas is discharged in a downward radial direction into the bed below the combustion jet within the gasification reactor. Roberge discloses that various ones of the commercial alloys recited in Applicants' dependent claims are known in the chemical industry for construction of equipment that can be exposed to high temperatures and corrosive environments.

It is respectfully submitted that Cherish fails to disclose all of the elements of Applicants' FVI system for an MTO reactor, as that system is described in claim 59, as it would be amended herein. In particular, Cherish fails to disclose a coaxial tube-based nozzle system that involves a cooling pathway for a feedstock cooling medium and which utilizes a thermocouple to monitor the temperature of the feed nozzle surface. Cherish further fails to disclose any means for modifying the characteristics of a cooling medium, which can be employed in the cooling pathway arrangement of Applicants' system, to control the temperature of the feed nozzle surface, to thereby prevent heating of the feedstock to unacceptable levels. The absence of these elements in the Cherish disclosure is not surprising, given that the Cherish apparatus is designed to convey a completely different kind of feedstock to a completely different kind of reactor under completely different feed conditions from the feed introduction system which Applicants claim. In short, the failure of the Cherish reference to teach all of the several apparatus elements which would be recited in Applicants' claim 59 as amended herein means that Cherish would not anticipate this amended claim under 35 USC §102(b).

It is further respectfully submitted that the combination of the teaching of the Roberge secondary reference with the Cherish disclosure does not render Applicants' claims 95, 102 and 103 unpatentably obvious. Roberge clearly only relates to alloy use in general and does nothing to rectify the deficiencies of the Cherish teachings with respect to Applicants' inclusion of a thermocouple and cooling medium modification means in their claimed MTO FVI system. Accordingly, therefore, the Cherish/Roberge reference matrix cannot properly be said to compromise patentability of Applicants' claims 95, 102, and 103 under 35 U.S.C. §103(a).

CONCLUSIONS

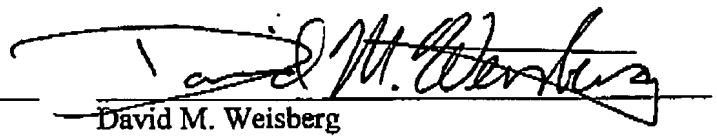
Applicants have made an earnest effort to place their application in proper form and to distinguish their claimed invention from the applied prior art. WHEREFORE, reconsideration of this application, entry of the claim amendments presented herein, withdrawal of the claim rejections under 35 U.S.C. §102 and 35 U.S.C. §103, and allowance of amended claims 59, 95, 102, and 103 are respectfully requested. Alternatively, entry of the amendments presented herein in order to place the claims in better form for appeal is respectfully requested.

It is also respectfully requested that the Examiner expeditiously notify Applicants' undersigned attorney as to the disposition of the amendments and arguments presented herein in accordance with MPEP §714.13.

Any comments or questions concerning the application can be directed to the undersigned at the telephone number given below.

Respectfully submitted,

Date: 4/13/07



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